

51
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a pair of alternately conducting switching transistors connected by way of a mid-point in series across said center-tapped source of DC voltage and operative to provide said AC voltage between said mid-point and said center-tap; and connect means operative to connect the load between said mid-point and said center-tap; whereby one side of said load is directly connected with one of said input terminals.

122. In an inverter adapted to be powered from a DC source having a center-tap and to provide an AC voltage output, said AC voltage being of substantially trapezoidal waveshape, said inverter comprising a pair of alternately conducting switching transistors connected by way of a mid-point in series across said DC source, said AC voltage output being provided between said center-tap and said mid-point, the improvement comprising:

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a series-connected combination of an inductor and a capacitor connected between said center-tap and said mid-point, said series-connected combination having a natural resonance frequency that is not higher than the fundamental frequency of said AC voltage; and

means to permit connection of a load in circuit with said capacitor.

123. In a ballasting circuit for a gas discharge lamp, said ballasting circuit comprising an inverter adapted to be powered from a source of DC voltage and to provide an AC voltage across a pair of output terminals, said AC voltage being substantially of trapezoidal waveform, the improvement comprising:

a series-combination of an inductor and a capacitor connected across said pair of output terminals;

means for connecting said gas discharge lamp in parallel circuit with said capacitor;

means for operating the inverter at a frequency that is not higher than the natural resonant frequency of the series-combination of said inductor and capacitor.

COMMENTS

Anticipating possible objections by Examiner relative to the allowability of the new claims, Applicant herewith provides arguments in their support. More particularly, with reference to Examiner's Advisory Action in response to subject Amendment E, Applicant herewith provides the following comments.

In re Claim 1 of Subject Original Application

On page 4, lines 1-2 of subject Advisory Action, Examiner states: "The pulses of figure 2 are of a higher frequency than waveform D".

Applicant believes that this statement by Examiner represents the gist of the issue in re Claim 1. And, Applicant takes exception to that statement, contending that it is either false or irrelevant -- depending upon interpretation.

The term "are of a higher frequency" in Examiner's statement renders the statement somewhat ambiguous, possibly permitting an interpretation relating to the harmonic content of "The pulses". However, any reasonable interpretation must relate to the fundamental repetition rate of "The pulses", and not to their harmonic content.

Applicant contends that "The pulses" are provided at a frequency identical to that of "waveform D". Although "The pulses" definitely have harmonics of higher frequencies than does "waveform D", the frequency with which "The pulses" occur must by necessity be identical to the frequency with which "waveform D" appears.

However, in Claim 1 Applicant uses a phraseology that is substantially different from that used by Examiner; and Applicant's phraseology is definitely not ambiguous -- being as follows:

"means for providing drive current to the transistors to control the inversion frequency thereof to be higher than the natural resonant frequency of the inductor and capacitor combination".

In any reasonable usage, the term "inversion frequency" refers to the number of cycles per second provided by the inversion means (i.e., the transistors) -- or, the number of inversion cycles per second performed by the inverter -- or, the number of cycles per second of the inverter output voltage. By no reasonable stretch of interpretation can the term "inversion frequency" be construed to mean the harmonics associated with the waveshape of the inverter's output.

Similarly, the term "natural resonant frequency of the inductor and capacitor combination" is completely unambiguous and is simply given by the inverse of the well known expression: $2\pi\sqrt{LC}$, where L and C represent the inductance and the capacitance of the inductor and the capacitor, respectively.

This natural resonance frequency has nothing to do with the frequency of the voltage that may appear on the inductor and/or on the capacitor, nor with the frequency of the current

flowing through these components. The frequency of the voltage actually appearing on the inductor and/or on the capacitor, and the frequency of the current actually flowing through these components, is identical to the frequency of excitation provided by the driving source.

On Page 4, lines 6-9 of subject Advisory Action, Examiner makes the following statement: "inductor 16 and capacitor 17 are clearly connected in series between the junction point of transistors 26 and 54. This is all that claim 1 requires."

Applicant disagrees with Examiner, and wishes to point out to Examiner that "transistors 26 and 54" do not constitute active components of Friend's inverter. Rather, they constitute part of his inverter's loading circuit, and they definitely do not provide for the series-connected inductor and capacitor "to be alternately energized during alternate conduction thereof" -- as called for in Claim 1.

Yet, Friend's inverter does have two inverter transistors, namely transistors 14 and 42 in his Fig. 1; and Applicant has to concede that it is a fact that there is an inductor and a capacitor connected in series across this inverter's output terminals -- just as is called for in Applicant's Claim 1.

Never-the-less, in accordance with the arguments presented hereinabove, Claim 1 should be allowable just on the basis of the distinction provided by the following part of the claim:

"means for providing drive current to the transistors to control the inversion frequency thereof to be higher than the natural resonant frequency of the inductor and capacitor combination".

However, for reasons other than simple allowability, Applicant has chosen to rewrite Claim 1. In its rewritten form it now appears as Claim 116.

In re Claim 86 of Subject Original Application

On page 4, lines 20-23 of subject Advisory Action, Examiner states: "a 'substantially square wave voltage' is developed between transistors 26, 54 and ground, the anticipating output terminals of Friend".

In this connection, Applicant wishes to point out that transistors 26 and 54 do not constitute the inverting transistors in Friend's circuit. Rather, the inverting transistors are 14 and 48.

On the contrary, the specific purpose of transistors 26 and 54 (or emitter followers 24 and 52) is that of providing during part of the time of each cycle a low impedance path to ground for the current flowing in the inductor 16.

By studying the detailed operation of Friend's circuit -- particularly lines 3-53 of column 3 -- it should be obvious that the voltage at the junction between transistors 26 and 54 is substantially zero during the time periods t2-t3 and t4-t5 in Friend's Fig. 2a. This is specifically described in and around lines 25-27 and lines 50-52 in Friend's column 3.

Thus, the output of Friend's inverter circuit -- as appearing at the junction between his transistors 26 and 54 -- is clearly not a squarewave. Rather, it is a voltage of waveform similar to that which would have resulted by adding the two waveforms depicted by Friend's Fig. 2a and Fig. 2c.

However, for reasons other than simple allowability, Applicant has chosen to rewrite Claim 86. In its rewritten form it now appears as Claim 123.

Concluding Remarks

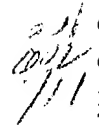
The other claims from the original application have also been rewritten -- partly to circumvent Examiner's objections as based on the cited art, and partly to provide for improved claim quality. The arguments and explanations previously provided, particularly in connection with Claims 1 and 86, apply to these other claims as well.

If Examiner should have reservations about the allowability of the new claims, but if he does find that patentable matter is disclosed in subject application, he is asked -- in accordance with paragraph 707.07(j) in the Manual of Patent Examining Procedure -- to draft for Applicant a set of allowable claims covering such unclaimed allowable subject matter.


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